



Agricultural
Research
Service

South
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Tillage Requirements for Integrating Winter-Annual Grazing in Peanut Production

Why Does it matter?

Integrating winter-annual grazing of cattle with peanut cropping could increase profitability for peanut producers. However, winter-annual grazing could result in excessive soil compaction, which can severely limit peanut yield.

What was done?

We conducted a 3-yr field study in the Coastal Plain to develop a conservation tillage system for integrating peanut with winter-annual grazing of stocker cattle under dryland conditions. We contract-grazed oat and annual ryegrass with yearling steers for 90 days during winter and planted peanut with different tillage systems following the grazing in spring. Tillage systems included: moldboard and chisel plowing; and combinations of non-inversion deep tillage (none, in-row subsoil or paratill) with/without disking. We determined soil water content, peanut water stress, plant density, peanut yield, peanut net return and total system annual net return.



What was found?

Peanut following oat increased soil water extraction (15%), stands (12%) and yields (21%) compared to peanut following ryegrass. This showed oat was a better choice than ryegrass for peanut grown following winter annual grazing. Strict no-tillage resulted in the lowest yields (2045 lb/acre) and non-inversion deep tillage (especially in-row subsoiling) was required to maximize water use and yields with conservation tillage. However, deep tillage in conventional surface tillage systems did not increase peanut yield. Net return from grazing averaged \$75/acre/year. The best integrated grazing-peanut system was planting peanut with no-tillage and in-row subsoiling, following grazed oat. This system averaged \$187/acre/year net returns over variable costs.

What is the impact?

With the elimination of the quota support price in the 2002 Farm Bill, integrating winter-annual grazing with peanut production can be an effective means to help peanut farmers increase income and reduce production costs. This information can be used by extension specialists, USDA-NRCS, crop consultants, and producers to increase farm profits and promote the use of environmentally and economically sustainable conservation practices on the 1 million acres of peanut grown in the Southeast.

Research Team and Contact information

Cooperating Scientists:

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Tillage Requirements for Integrating Winter-Annual Grazing in Cotton Production

Why Does it matter?

Integrating livestock with cotton offers profitable alternatives for producers in the southeastern USA, but could result in soil water depletion and soil compaction, reducing cotton yields.

What was done?

We conducted a 3-yr field study in the Coastal Plain to develop a conservation tillage system for integrating cotton with winter-annual grazing of stocker cattle under dryland conditions. We contract-grazed oat and annual ryegrass with yearling steers for 90 days during winter and planted peanut with different tillage systems following the grazing in spring. Tillage systems included: moldboard and chisel plowing; and combinations of non-inversion deep tillage (none, in-row subsoil or paratill) with/without disking. We evaluated soil water content, cotton water stress, cotton yield, net returns from cotton, and total integrated-system annual net returns.



What was found?

Net returns from winter-annual grazing were \$75 to \$81/acre per year. Soil water content during bloom was reduced 15% with conventional tillage or in-row subsoiling, suggesting that cotton rooting was increased by these systems. Cotton stands following oat grazing were increased 25% compared to following ryegrass and yields following grazed oat were 7% greater than following grazed ryegrass. Strict no-tillage resulted in the lowest yields; 30% less than the overall mean (3295 lb seed cotton per acre). However, strip-tillage (no-till with in-row subsoiling, especially with the paratill) following grazed oat was the best system combination, averaging 3545 lb seed cotton/acre over the three years.

What is the impact?

Integrating winter-annual grazing can be achieved using in-row subsoiling or paratilling following oat in a conservation tillage system, providing producers extra income while protecting the soil resource. This information can be used by extension specialists, USDA-NRCS, crop consultants, and producers to increase farm profits and promote the use of environmentally and economically sustainable conservation practices on the 4 million acres of cotton grown in the Southeast.

Research Team and Contact information

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